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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/325,534	06/03/1999	CHARLES J. NAEGELI	CISCP085/799	2932

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EXAMINER

KUMAR, PANKAJ

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 04/16/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/325,534

Applicant(s)

NAEGELI ET AL.

Examiner

Pankaj Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 and 31 is/are allowed.
- 6) ☒ Claim(s) 15, 17, 18, 20-22, 24-27, 29, 30 and 32 is/are rejected.
- 7) ☒ Claim(s) 16, 19, 23 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed are moot in view of the new grounds of rejection.

### ***Response to Amendment***

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 15, 17, 18, 20-22, 24-25, 27, 29 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Naegeli 6,574,797.
4. As per claim 15, Naegeli teaches a cable modem termination system (CMTS) which can issue time slots for upstream transmission by individual cable modems on a cable modem network having a plurality of cable modems, the CMTS capable of detecting faulty cable modems, the CMTS comprising: an upstream receiver and demodulator capable of receiving an upstream signal (Naegeli fig. 5: 502; in order for the receiver to be effective, it will demodulate to frequencies of interest); a Fast Fourier Transform (FFT) engine capable of performing FFT measurements on the upstream signal (Naegeli fig. 5: 506) and storing the FFT measurements (Naegeli fig. 5: 508); and a processor for performing computations on the FFT measurements and communicating data (Naegeli fig. 5: 510, 512, 514), wherein the data relates to noise levels

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of the upstream signal (Naegeli fig. 5: 508 says “Noise Data”; 502 says “Upstream”) at predetermined times where in the predetermined times correspond to:

- a. a first time when a cable modem is transmitting data upstream (Naegeli fig. 7: peaks 710, 714), and
- b. a second time when no data is being transmitted upstream (Naegeli fig. 7: 708, 712, 716; col. 8 line 12: “Fig. 7 is a graph plotting time and power level ...”).

5. As per claims 17 and 18, Naegeli discusses communication systems and FPGAs are commonly used in communication systems which also incorporate FFTs (Naegeli fig. 5: 508 uses FPGA).

6. As per claim 20, Naegeli teaches a CMTS as recited in claim 15 wherein the FFT engine is located outside a headend of a cable television plant (Naegeli fig. 5 FFT is being performed by upstream reception which means figure 1s 120 and 122 are performing the reception and FFTing of upstream data from 100 and 102).

7. As per claim 21, Naegeli teaches a method of detecting a faulty cable modem in a cable television plant having a plurality of cable modems, the method comprising: taking a first FFT measurement of an upstream spectrum (Naegeli fig. 5: 506), creating a first frequency power spectrum at a time when a cable modem is transmitting data upstream (Naegeli fig. 7: peaks 710, 714); taking a second FFT measurement of the upstream spectrum (Naegeli fig. 5: 506 occurs in a loop), creating a second frequency-power spectrum, at a time when no data is being transmitted upstream by any of the plurality of cable modems in the cable television plant (Naegeli fig. 7: 708, 712, 716); calculating a power-difference between the first FFT measurement and the second FFT measurement (Naegeli fig. 5: 510 determining number of contiguous bins below

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noise threshold); and utilizing the power-difference to determine whether the cable modem is faulty (Naegeli fig. 5: 514; when a modem is transmitting at a certain frequency and that frequency bin is not part of the new bandwidth of fig. 5: 512, that modem's transmission at that frequency will be faulty; if a modem is only transmitting at that frequency, the entire modem will be faulty.).

8. As per claim 22, Naegeli teaches a method as recited in claim 21 further comprising allocating a dummy time slot in which no data is transmitted upstream in the cable television plant (Naegeli fig. 7: 708, 712, 716; col. 8 line 12: "Fig. 7 is a graph plotting time and power level ...").

9. As per claim 24, Naegeli teaches a method as recited in claim 21 wherein calculating a power difference further comprises calculating the difference between corresponding FFT points in the first frequency-power spectrum and in the second frequency-power spectrum (Naegeli fig. 7: difference between peaks and no peaks).

10. As per claim 25, Naegeli teaches a method as recited in claim 21 wherein utilizing the power-difference to determine whether the cable modem is faulty further comprises comparing the power-difference with a threshold power level (Naegeli fig. 5: 510 determining number of contiguous bins below noise threshold).

11. As per claim 27, Naegeli 6574797 102e teaches a method of detecting faulty modems in a network employing multiple channels, separated in frequency to allow modems to transmit data, the method comprising: for a selected modem transmitting data in a frequency channel (Naegeli fig. 5: 502 upstream receiver receiving from an upstream transmitter; fig. 7: peak 710), comparing extra-channel noise outside the frequency channel when it is transmitting data

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(Naegeli fig. 7: peak 714) with a noise floor outside the frequency channel when either the selected modem nor any other modem on the network is transmitting data (Naegeli fig. 7: 708, 712, 716); and if the difference between the extra-channel noise when the modem is transmitting and when the modem is not transmitting is greater than a predetermined threshold (Naegeli fig. 5: 504), disabling the selected modem (Naegeli fig. 5: 514; when a modem is transmitting at a certain frequency, that modem's transmission at that frequency will be disabled; if a modem is only transmitting at that frequency, the entire modem will be disabled.).

12. As per claim 29. A method as recited in claim 27 wherein the network is a cable television plant and the modems are cable modems (Naegeli fig. 1).

13. As per claim 32, computer program has been discussed in Naegeli such as in the abstract. The remainder of the elements have been discussed above in respect to other claims.

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naegeli.

16. As per claims 26 and 30, Naegeli teaches a method as recited in claims 25 and 27, respectively, with threshold. What Naegeli does not teach is wherein the threshold power level is 15 dB for QPSK modulation and 25 dB for QAM16 modulation. It would have been obvious

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to one skilled in the art at the time of the invention to modify Naegeli to teach optimum threshold values. One would be motivated to do so since thresholding is discussed in Naegeli, such as with noise threshold, and discovering an optimum threshold value requires only routine skill in the art.

*Allowable Subject Matter*

17. Claims 1-14, 31 are allowed.

18. Claims 16, 19, 23 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:  
The art of record does not suggest the respective claim combinations together and nor would the respective claim combinations be obvious with the following underlined portions:

As per claim 1: informing a FFT generator of the first time slot and of the second time slot generating one or more FFT measurements of an upstream spectrum during the first time slot when the cable modem can transmit upstream and the second time slot when no cable modem on the network is transmitting upstream; and comparing of FFT measurements of the first time slot with FFT measurements of the second time slot thereby detecting undesirable noise created by the cable modem.

20. Claims 2-14 depend on claim 1 and thus are also accordingly allowed.

21. Claim 31 is allowed for same reason as claim 1.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on Mon, Tues, Wed and Thurs after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (703) 306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PK

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PRIMARY EXAMINER  
4/15/84